User Manual

Antennas

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Directional Antenna - Is an antenna that radiates a signal in one direction using a tight beam pattern. These antennas come in several styles; yagi, panel and parabolic.

db (decibel) - A unit of measurement for Antenna strength. The higher the db rating the higher the strength of the antenna.

Cable Loss - The loss in signal strength (db) due to the length of your antenna cable. The longer the cable, the greater the signal loss.

Fresnel Zone - An elliptical area on either side of the straight line of sight that must also be clear for a long-range wireless signal to work.

Gain - Amount of wireless signal strength added to a standard signal normally measured in db 's.

MC Card Connector - Antenna connector type used on Buffalo Technology routers/AP's, adapter and indoor antenna products.

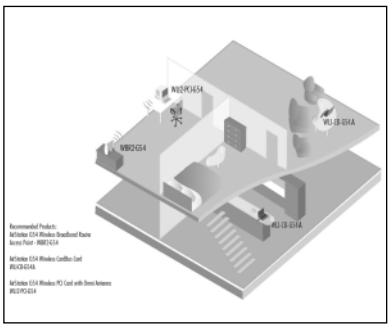
N type connector - Antenna connector type used on Buffalo Technology outdoor antenna's and coaxial cable.

Omni-Directional Antenna - An Antenna that radiates a signal in a 360 degree radius horizontally and a signal vertically with a degree spread that is dependent on the antenna's elements.

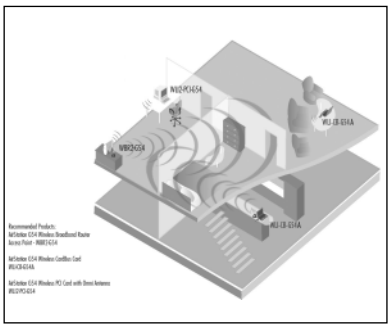
Wireless signals travel outward in an arc pattern from the source. These radio frequencies lose significant signal strength when traveling through walls, windows and other objects. Materials like metal, stucco and thick concrete can actually stop a wireless signal from passing through. Sometimes these obstacles can be overcome by adding an antenna to your wireless network.

Another issue is distance as the signal spreads outward from the source it becomes dispersed and looses signal strength and bandwidth. This is where an antenna helps the most in increasing the overall signal and carrying it farther. An average 8 dbi outdoor antenna can carry your signal up to 3/4 of a mile. Different Antennas have different signal patterns.

Signal range without external antenna



Signal range with external antenna



Large Form Factor Access Points / Routers

❶ Locate the antenna connector sliding door on the rear of the AirStation.

❷ Slide the door down on the rear of the AirStation to reveal the external antenna connector.
Note: On some AP's the door slides sideways.

❸ Connect the antenna to the AirStation by plugging the male MC Card connector on the antenna cable to the female MC Card connector on the AirStation. Push firmly into place to ensure a good connection.

❹ Run the cable down the left side of the AirStation and push behind the plastic tab to keep the antenna from coming loose.

Small Form Factor Access Points / Client Adapters

❶ Locate the rubber antenna connector plug on the rear of the AirStation.

❷ Remove the Rubber plug on the rear of the AirStation to reveal the external antenna connector.
Note: On some AP's the door slides sideways.

❸ Connect the antenna to the AirStation by plugging the male MC Card connector on the antenna cable to the female MC Card connector on the AirStation. Push firmly into place to ensure a good connection.

❹ Run the cable down the back of the AirStation.

PCMCIA Client Adapters

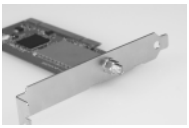
❶ Locate the rubber plug hiding the external MC Card antenna connector on the top of the AirStation Notebook Adapter.

❷ Pull the rubber plug to reveal the external antenna connector

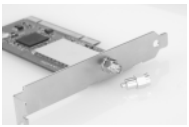
❸ Connect the antenna to the Notebook Adapter by plugging the male MC Card connector on the antenna cable to the female MC Card connector on the Notebook Adapter. Push firmly into place to ensure a good connection.

NOTE: Client Cards with external antenna support vary but installation remains the same.

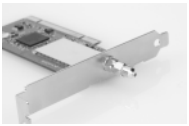
PCI Client Adapter



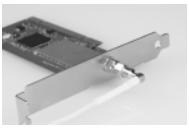
❶ Disconnect the rubber antenna from card.



❷ Find the conversion coupler included with the card.



❸ Attach the coupler to the card.

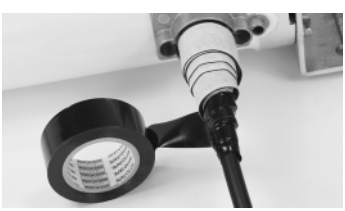


❹ Connect the antenna to the card.

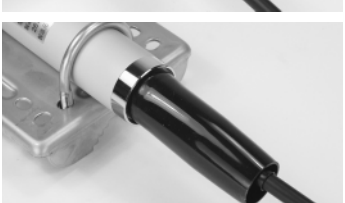
To install the WLE-HG-DYG and the WLE-HG-NDC you first slide the rubber boot provided over the coaxial cable and then connect the coaxial cable to the antenna as shown below.

You then use the included vinyl tape and wrap the connection with it. See picture.

Next wrap the vinyl taped connection with the electrical tape provided. These steps are to help ensure the connection stays stable and provide water proofing. Important thing to remember is to start tapping from the bottom up so that each layer is overlapping this will help keep water out of the connection see image.



After you have wrapped the connection you slide the boot from the previous step over the taping. It should fit flush against the bottom of the connection base.



Now connect the N-male to MC-card pigtail adapter to the other end of the cable, as shown.

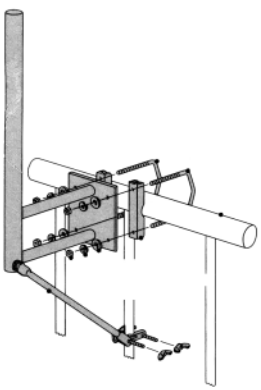
Now connect the MC-Card connector to your Buffalo product.

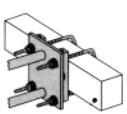
If you are connecting this antenna outside a building or enclosure and high on a pole you should include a Lightning protector like the one shown below. Which can be obtained from third party sources.

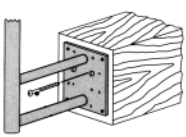
This device will connect between the antenna and the coaxial cable you will then proceed with the other steps as listed.

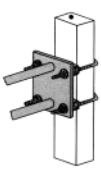
When mounting an external antenna it is important to pay attention to the location you are installing it. Please be aware that small incremental changes in elevation either up, down or side to side can make significant changes in the signal quality. Several adjustments may be required to achieve the best signal. You should test mount all antennas to check their signal patterns before making their mounting permanent.

WLE-KG-VPA

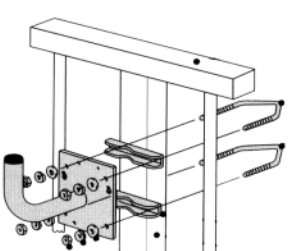


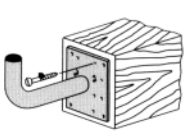


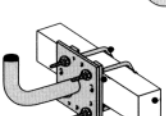




WLE-KG-VPB



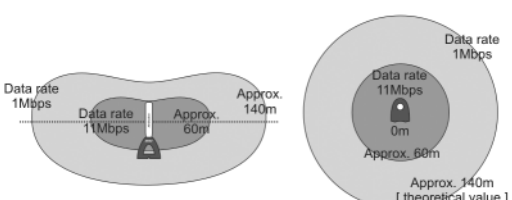




Technical Specifications

Polarization Method	Vertical Polarizations
Connector Type	MC
Frequency Range	2,401 - 2,484 MHz (1-11channel)
VSWR	1.5 or less with coaxial cable
Antenna Gain	Total gain 2.5 dbi or more, without the cable
loss	
Range Goal	Increase in LOS 20%or more,
	50% or more using both sides
Dimensions	164 X 73 X 65 mm
Weight	110 g
Package Contents	AirStation Omni Antenna, Mounting Screws, Reference Card, Warranty Card, Manual

Antenna Range/Pattern



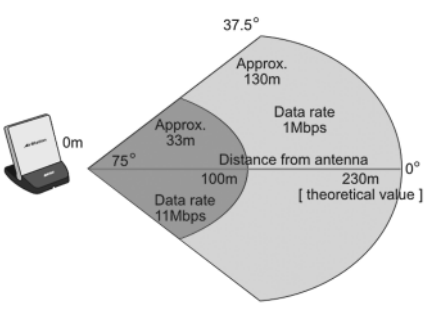
Connect the antenna's MC card connector into the wireless device. Then adjust the antenna to send/receive the best signal. When using the antenna on an adapter you can judge the signal strength by watching the bars on the client manager as you adjust the antenna. When used on a router/AP you can test it by placing a device with a wireless adapter at a low signal position and then move the antenna on the router/AP to see if the signal improves.

Technical Specifications

Polarization Method	Vertical Polarizations
Connector Type	MC
Frequency Range	2,401 - 2,484 MHz (1-11channel)
VSWR	1.5 or less with coaxial cable
Antenna Gain	Total gain 4 dbi or more, including the cable loss
Range Goal	Unobstructed =200% (400% or more using flatbed antennas on both sides)
Dimensions	100 X 100 X 17 mm
Weight	0.3 g
Package Contents	AirStation FlatBed Antenna, Mounting Screws, RP-TNC to MC card adapter, Reference Card, Warranty card, Manual

Connect the antenna's MC card connector into the wireless device. Then adjust the antenna to send/receive the best signal. When using the antenna on an adapter you can judge the signal strength by watching the bars on the client manager as you adjust the antenna. When used on a router/AP you can test it by placing a device with a wireless adapter at a low signal position and then move the antenna on the router/AP to see if the signal improves.

Approximate Range

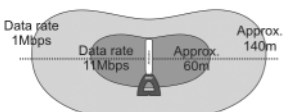


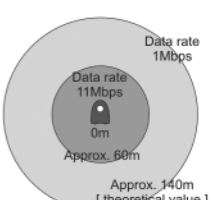
Technical Specifications

Polarization Method	Vertical or Horizontal; Horizontal during transmission
Connector Type	MC, external MC to RP-TNC connector included
Frequency Range	2,401 - 2,484 MHz (1-11channel)
Antenna Gain	6.5 dBi (4.7 dBi including cable loss)
Dimensions	35 X 10.5 X 10 cm
Weight	0.22 kg ,0.45 lb.
Package Contents	2.4 GHz Indoor Omni Antenna with 5 foot cable, 2 Screws for wall mounting, MC to RP-TNC connector, Quick Setup Guide, Warranty Statement

Connect the antenna's MC card connector into the wireless device. Then adjust the antenna to send/receive the best signal. When using the antenna on an adapter you can judge the signal strength by watching the bars on the client manager as you adjust the antenna. When used on a router/AP you can test it by placing a device with a wireless adapter at a low signal position and then move the antenna on the router/AP to see if the signal improves.

Approximate Range





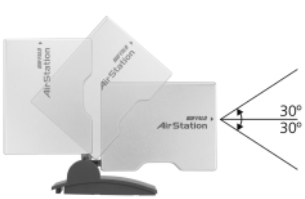
Adjustment of antenna angle is recommended to improve the signal strength and boost performance.

The AirStation 6.5 dBi High Gain Indoor Omni Directional Antenna, model WLE-HG-NDR supports 2.4 GHz 802.11g and 802.11b wireless devices to increase signal strength up to 2 times and boost wireless performance. MC to RP-TNC connector adapter is included for use with other manufacturers' wireless devices. The 5 ft.cable offers the option for desktop placement or wall mounting. Slick design, easy installation offers a perfect high gain antenna solution for any wireless network.

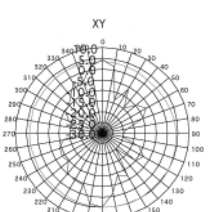
Technical Specifications

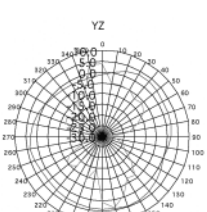
Polarization Method	Vertical or Horizontal; Horizontal during transmission
Connector Type	MC,external MC to RP-TNC connector included
Frequency Range	2,401 - 2,484 MHz (1-11 Channels)
Antenna Gain	4.5 dBi including cable loss
Weight	0.77 kg
Dimensions	11.6 x 3.6 x 8.1 cm
Package Contents	WLE-MYG Antenna, MC to RP-TNC Connector Adapter with attached cable, Two Screws, Quick Setup Guide, Warranty Statement

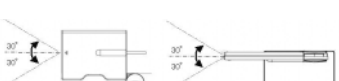
Connect the antenna's MC card connector into the wireless device. Then adjust the antenna to send/receive the best signal. When using the antenna on an adapter you can judge the signal strength by watching the bars on the client manager as you adjust the antenna. When used on a router/AP you can test it by placing a device with a wireless adapter at a low signal position and then move the antenna on the router/AP to see if the signal improves.

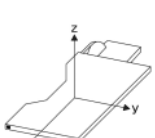


The AirStation 5.4 dBi Compact Indoor Directional Antenna, model WLE-MYG supports 2.4 GHz 802.11g and 802.11b wireless devices to increase signal strength up to 2 times and boost wireless performance. An MC to RP-TNC connector adapter is included for use with other manufacturers' wireless devices. Compact size offers the flexibility for laptop placement. Adjustable antenna face angle provides ease of installation and use. WLE-MYG is a perfect compact antenna solution for any wireless network environment.







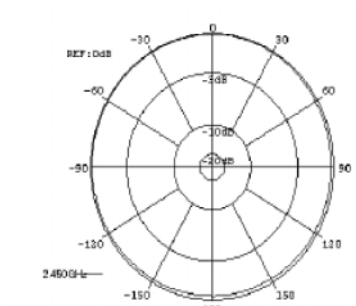


Technical Specifications

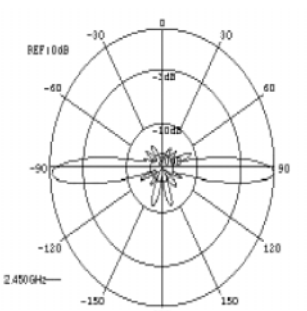
Antenna Type	Omni
Polarization Method	Vertical Polarity
Polarity, Vertical	15 ± 5° Half value angle
Polarity, Horizontal	32 ± 5° Half value angle
Connector Type	N-type Female coaxial connector
Frequency Range	2401 - 2484 MHz (1~11channel)
VSWR	1.5 or less (with co-axial cable)
Antenna Gain	7 dBi or more (antenna only)
Max Input Power	10 W
Wind Resistance	60 m/s or more
Water Proof	Class 3 water proof
Life	8 years
Installation Method	Pole Mount (Pole not included)
Mounting Pole	Diameter ø25~48.6 mm
Operation Environment	Temp -30-75°C
Humidity	20-95%
Pressure	800-1060 hPa
Package Contents	AirStation Omni Antenna, Antenna pigtail, Mounting Brackets, Electrical Tape, Vinyl Tape, Rubber Boot, Warranty card, Manual

Directivity Pattern Diagrams

Vertical directivity pattern



Horizontal directivity pattern

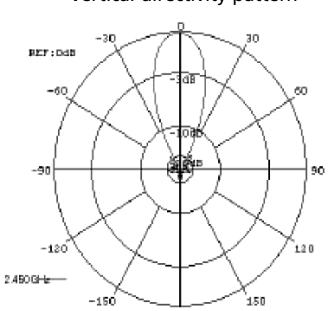


Technical Specifications

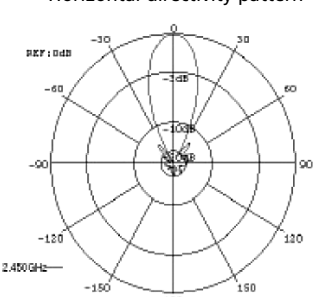
Polarization Method	Flat Diversity Antenna (uni-directional)
Polarization Method	Vertical Polarity
Polarity, Vertical	32 ± 5° Half value angle
Polarity, Horizontal	32 ± 5° Half value angle
Connector Type	N-type Female coaxial connector
Frequency Range	2401 - 2484 M Hz (1~11channel)
VSWR	1.5 or less (with co-axial cable)
Antenna Gain	14 dBi or more (antenna only)
Max Input Power	10 W
Wind Resistance	60 m/s or more
Water Proof	Class 3 water proof
Life	8 years
Installation Method	Pole Mount (pole not included)
Mounting Pole Diameter	ø25~48.6 mm
Operation Environment	Temp -30-75°C
Humidity	20-95%
Pressure	800-1060 hPa
Package Contents	AirStation Outdoor Directional Antenna, Antenna pigtail, Mounting Brackets, Electrical Tape, Vinyl Tape, Rubber Boot, Warranty card, Manual

Directivity Pattern Diagrams

Vertical directivity pattern



Horizontal directivity pattern



WLE-CC5

Coaxial Cable for Wireless Lan Outdoor Antenna.
This is a LMR400 coaxial cable with 2 N male connectors.It comes in 3 lengths 5m,10m and 20m.

WLE-LNC

Pigtail Adapter for Outdoor Antennas Connection
The pigtail connector converts the Airstation 's MC Card connector to an N-Type Coaxial connector for use with outdoor antenna cables and outdoor antennas.

WLE-KG-VPA

Outdoor mounting bracket for the WLE-HG-NDC and WLE-HG-DYG.
Please see page XX for installation tips.

WLE-KG-VPB

Outdoor mounting bracket for the WLE-HG-NDC and WLE-HG-DYG.
Please see page 10 for installation tips.

Buffalo Technology offers toll-free technical support 24 hours a day, 7 days a week for this product. Customers in the United States and Canada can obtain technical support using the following information:

- Web www.buffalotech.com/wireless
- E-mail help@buffalotech.com (Retail Channel Customers) info@buffalotech.com (All other Customers)
- Telephone 866-752-6210 (USA &Canada only)

The constantly evolving state of wireless products and operating systems requires Buffalo Technology to occasionally release updated software to take advantage of new technologies and to comply with industry standards. For the most recent software, firmware, driver,and technical white paper releases available,please visit the Buffalo Technology website.

Buffalo Technology (USA), Inc. products comes with a two-year limited warranty from the date of purchase. Buffalo Technology (USA), Inc. warrants to the original purchaser the product; good operating condition for the warranty period. This warranty does not include non-Buffalo Technology (USA), Inc. installed components. If the Buffalo product malfunctions during the warranty period, Buffalo Technology (USA) Inc. will replace the unit, provided the unit has not been subjected to misuse, abuse, or non-Buffalo Technology (USA), Inc. authorized alteration, modifications or repair.

All expressed and implied warranties for the Buffalo Technology (USA) Inc. product line including, but not limited to, the warranties of merchantability and fitness of a particular purpose are limited in duration to the above period.

Under no circumstances shall Buffalo Technology (USA), Inc. be liable in any way to the user for damages, including any lost profits, lost savings or other incidental or consequential damages arising out of the use of, or inability to use the Buffalo products.

In no event shall Buffalo Technology (USA), Inc. liability exceed the price paid for the product from direct, indirect, special, incidental, or consequential damages resulting from the use of the product, its accompanying software, or its documentation. Buffalo Technology (USA), Inc. does not offer refunds for any product.

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FCC Compliance Statement - This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1)This device may not cause harmful interference, and (2) this device must accept any interference received,including interference that may cause undesired operation.

R&TTE Compliance Statement - This equipment complies with all the requirements of the DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of 9 March 1999 on radio equipment and telecommunication terminal equipment and the mutual recognition of their conformity (R&TTE). See the user manual for the complete statement.